AMSAT News Service Weekly Bulletins
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AMSAT NEWS SERVICE
ANS-303

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to: ans-editor [at] amsat.org

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ANS-303 AMSAT News Service Weekly Bulletins

To: All RADIO AMATEURS
From: Radio Amateur Satellite Corporation
712 H Street NE, Suite 1653
Washington, DC 20002

DATE 2022 Oct 30

MESAT-1 to Carry AMSAT Linear Transponder Module

An AMSAT-constructed linear transponder module is included in the MESAT 3U satellite to be deployed as part of NASA's upcoming ELaNa 43 mission.

MESAT-1 is a stack of three tech-stuffed 4-inch cubes assembled at the University of Maine and destined for space in 2022. The first satellite of its kind ever built in Maine, MESAT-1 carries three imaging experiments proposed by Maine schools and a 2-way radio for use by ground control and amateur radio enthusiasts.

MESAT-1 was originally projected to launch from Vandenberg Space Force Base, California, in June 2022, but has been delayed. The satellite will be carried by a Firefly Aerospace "Alpha" rocket and released into a

Sun-synchronous orbit about 555 kilometers (350 miles) above Earth. It will fly nearly over the poles traveling at about 7.8 kilometers per second (17,000 mph), making a full orbit in roughly 100 minutes. Any given location on Earth will experience 4 to 6 passes per day, with each pass lasting less than 15 minutes. MESAT-1 is expected to remain in space for well over a decade.

A statewide competition in 2019 drew payload proposals from schools across Maine. Three projects were selected for the MESAT-1 mission: ALBEDO, IMAGER, and HAB.

ALBEDO: Saco Middle School will study reflected light (albedo) and local temperature in urban and rural areas, with the idea that urban heat islands could be mitigated through architectural designs that reflect more light.

IMAGER: Fryeburg Academy will photograph shallow coastal waters as part of an effort to distinguish turbidity and phytoplankton concentration from space. The academy is collaborating with the Wells National Estuarine Research Reserve.

HAB: Falmouth High School will work on early detection of harmful algal blooms by measuring atmospheric temperature and water vapor levels around bloom areas. They will watch blooms develop, move, and disperse.

The main radio aboard MESAT-1 is a linear transponder module (LTM-1) built by the nonprofit Radio Amateur Satellite Corporation (AMSAT), a partner in the project. The ground station operator will command the satellite through LTM-1 and the module will transmit telemetry back to Earth. LTM-1 will also be made available to amateur radio operators for 2-way communication.

UMaine applied to the International Amateur Radio Union to coordinate its planned frequency use for MESAT-1. The IARU approved this plan on 22 November 2021:

    Telemetry beacon downlink: 435.800 MHz 1200 baud BPSK
    Transponder uplink: 145.910-145.940 MHz
    Transponder downlink: 435.810-435.840 MHz

MESAT-1 carries a second radio, an EyeStar transmitter, originally intended to interface with the satellite's built-in GPS and the GlobalStar network to provide the ground team with accurate, hourly position information. This aspect of the mission was altered during MESAT-1 construction. The EyeStar unit will serve only a minimal function on MESAT-1.

Background on Maine's First CubeSat

MESAT-1 exists thanks to NASA’s CubeSat Launch Initiative (CSLI) and the Maine Space Grant Consortium. Through CSLI, NASA has selected more than 200 CubeSat missions for the Educational Launch of Nanosatellites program. More than 130 ELaNA satellites have been launched at NASA's expense since 2011.

In 2018, Maine Space Grant kicked off a pilot Maine CubeSat Launch Initiative to involve students and teachers from across the state in designing CubeSat missions. Through a competitive process, the consortium selected three experiments to propose for NASA's 2019 ELaNa opportunity.

The MESAT-1 proposal was accepted by NASA early in 2020. The satellite was paired with launch provider Firefly Aerospace for ELaNa mission 43.

Dr. Ali Abedi, director of the WiSe-Net Lab at UMaine Orono, assigned three UMaine graduate students the task of producing the satellite. With the support of the Maine Space Grant Consortium, they completed MESAT-1 in time for a 2022 launch.

[ANS thanks mainesat.org for the above information]

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Silver($600+)
John Boehme K4PRK
Warren Fugate W3WE
Mark Johns K0JM
Bruce Paige KK5DO
David A. Vine WA1EAW
Chuck Weaver W3VAR

Bronze($300+)
Allen Kenney KK4AK
Bruce Perens K6BP
Donald Pettigrew K9ECT
Scott Shaheen WB8OOJ
Thomas Talley K0CFI
Dave Taylor W8AAS
Ricky N. Walker K4TD

Core ($120+)
Oscar Alonso N6PAZ
Dwight Aussieker W9QJ
Steve Bachhuber K9SJB
Robert Brennan KC3CKV
Burlington Amateur Radio Club
George Carr WA5KBH
Michael Caughey N2BT
Jim Clary ND9M
Richard Dittmer KB7SAT
George Gallis AL7BX
David Grebe WA4LM
David Hartrum WA3YDZ
Stephen Howard AB0XE
Nels E. Knutzen W0PEC
Gailen Marshall N5GDM
Brendan McNeil ZL3BAM
Juan Munoz TG9AJR
Andrew Northam KE8FZT
Art Payne VE3GNF
Maxwell Rathbone W3POI
Jay Schwartz WB8SBI
Jason Schwarz N4JJS
Alton Simpson WA5TJB
Carl Starnes W4EAT
Paul Stoetzer N8HM
Christopher Wachs WA2KDL
Stefan Wagener VE4SW
Jeremy Wyatt KA2PFD

[ANS thanks Frank Karnauskas, N1UW, AMSAT VP-Development, for the above information]

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Italian Space Agency and AMSAT Italia are happy to inform the ham radio community that the GreenCube satellite will be switched in digipeater mode between 29-Oct-2022 00:01 UTC and 30-Oct-2022 23:59 UTC. Information on the setup required to access the satellite can be found on the team's web site https://www.s5lab.space/index.php/digipeater/.

The S5lab team of Sapienza provides the software needed to communicate with the satellite along with a technical guide of the setup and the GUI features. The archive contains:

    The user manual
    The Graphical User Interface (GUI)
    The Terminal Node Controller (TNC) software
    The GNURadio script to receive and transmit

The software kit can be downloaded from the same web page. The satellite digipeater implements a store-and-forward message service and works at 435.310 Mhz (U/L and D/L).

The 3U cubesat was launched on the Vega-C maiden flight on 13-Jul-2022 in a MEO orbit. The GreenCube project is being carried out through a collaboration agreement between the Italian Space Agency and Sapienza University of Rome, with the participation of ENEA and University Federico II of Naples. As for the radio frequency communications, a strong and effective cooperation with AMSAT Italia has been established, whereby AMSAT Italia endorsed the frequency coordination request.

The team can be reached via their website at the URL https://www.s5lab.space/index.php/contact-us/.

[ANS thanks Fabrizio Carrai, IU5GEZ, of AMSAT Italia for the above information]

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discussions about how they will use, and pay for, commercial space stations that will replace it.

Representatives of several countries currently involved in the ISS said during a panel at the American Institute of Aeronautics and Astronautics' ASCEND conference in Las Vegas, Nevada on Oct. 25 that they are looking at options for how to continue work they currently do on the ISS on the commercial space stations in low Earth orbit (LEO) NASA is helping develop to replace it at the end of the decade.

"With the commercialization of LEO, it is really necessary to revisit our principles of doing cooperation," said Peter Gräf, director of applications and science at the German space agency DLR. Germany is the biggest contributor to ESA's share of the ISS and actively uses the station for fundamental and applied research.

He said discussions among agencies and companies had started on how those arrangements would change with a commercial station. "We need to find ways to work together, certainly in other ways than we did before," he said. "There are a lot of options available and the main players are in heavy discussions on that."

The ISS today relies extensively on barter arrangements among participating agencies, providing services to cover their share of operations of the station. Such arrangements are unlikely to work for commercial stations, however.

"We need to find a new way of cooperating," said Nicolas Maubert, space counselor at the French Embassy in the U.S. and representative of the French space agency CNES in the U.S., citing the challenges of extending current barter arrangements to commercial stations. "We need to put on the table every option."

"The bottom line for all is that there is a strong demand for capabilities in low Earth orbit," Gräf said. "It's quite clear there will be a human outpost in LEO, no matter what the future will bring."

[ANS thanks SpaceNews.com for the above information]

ARISS NEWS

Amateurs and others around the world may listen in on contacts between amateurs operating in schools and allowing students to interact with astronauts and cosmonauts aboard the International Space Station. The downlink frequency on which to listen is 145.800 MHz worldwide.

POSTPONED: Five Bridges Junior High School, Stillwater Lake, NS, Canada, telebridge via VK4KHZ
The ISS callsign is presently scheduled to be NA1SS
The scheduled crewmember is Josh Cassada, KI5CRH
Contact is no longer go for: Wed 2022-10-26 13:42:09 UTC 66 deg due to crew timeline changes. It has been postponed to the week of Nov. 14, exact date and time TBD.
Watch for Livestream at https://www.youtube.com/c/ARISSlive and https://nslive.tv/five-bridges-ariss

Ufa, Russia, direct via TBD
The ISS callsign is presently scheduled to be RSØISS
The scheduled crewmember is Anna Kikina
Contact is go for Sun 2022-10-30 18:45 UTC

Harel Educational Campus, Holon, Israel, telebridge via VK4ISS

The ISS callsign is presently scheduled to be NA1SS
The scheduled crewmember is Josh Cassada, KI5CRH
Contact is go for: Fri 2022-11-04 09:43:51 UTC 50 deg

The crossband repeater continues to be active. If any crewmember is so inclined, all they have to do is pick up the microphone, raise the volume up, and talk on the crossband repeater. So give a listen, you just never know.

The latest information on the operation mode can be found at https://www.ariss.org/current-status-of-iss-stations.html

The latest list of frequencies in use can be found at https://www.ariss.org/contact-the-iss.html

[ANS thanks Charlie Sufana, AJ9N, one of the ARISS operation team mentors for the above information]

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PA0DLO, for calling it to our attention.)

+ AmazonSmile has made a charitable donation to the Radio Amateur Satellite Corporation, in the amount of $342.72 as a result of qualifying purchases made by customers between April 1st - June 30th. Thanks to customers shopping at smile.amazon.com or using the Amazon app with AmazonSmile turned ON, everyday purchases make an impact. So far, AmazonSmile has donated:
    $9,030.13 to Radio Amateur Satellite Corporation
    Over $377 million to US charities
    Over $422 million to charities worldwide

+ Draft minutes of the 2022 AMSAT Board of Directors meeting are now available at https://www.amsat.org/minutes-of-the-board-of-directors/ (ANS thanks AMSAT for this information)

+ AMSAT's 2021 Financial Review and 2021 IRS Form 990 are now available at https://www.amsat.org/audit-and-other-financial-reports/ (ANS thanks AMSAT for this information)

+ The Proceedings of the 2022 AMSAT Space Symposium are now available to AMSAT members on the AMSAT Member Portal at https://launch.amsat.org/Proceedings (ANS thanks AMSAT for this information)

+ Videos of the talks given at the 2022 AMSAT-UK International Space Colloquium are now available on YouTube. Playlist is at https://bit.ly/3sAcYIx (ANS thanks Trevor Essex, M5AKA, for the above information)

Join AMSAT today at https://launch.amsat.org/

In addition to regular membership, AMSAT offers membership to:

* Societies (a recognized group, clubs or organization).
* Primary and secondary school students are eligible for membership at one-half the standard yearly rate.
* Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status.
* Memberships are available for annual and lifetime terms.

Contact info [at] amsat.org for additional membership information.

73 and remember to help Keep Amateur Radio in Space!

This week's ANS Editor, Mark Johns, K0JM
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